

WHAT IS CLAIMED IS:

1. A catalyst for opening cyclic paraffins comprising a Group VIII (IUPAC Groups 8-10) metal component, a modifier component, a molecular sieve and a refractory inorganic oxide.
- 5 2. The catalyst of claim 1 where the Group VIII metal is selected from the group consisting of platinum, palladium, rhodium, ruthenium, iridium and mixtures thereof.
3. The catalyst of claim 1 where the catalyst is a physical mixture of molecular sieve particles and refractory inorganic oxide particles.
4. The catalyst of claim 1 where the Group VIII metal component is deposited on the
10 molecular sieve.
5. The catalyst of claim 1 where the Group VIII metal component is deposited on the refractory inorganic oxide.
6. The catalyst of claim 1 where the refractory inorganic oxide is selected from the group consisting of alumina, silica, silica/alumina, calcium oxide, magnesium oxide,
15 clays, zirconia and mixtures thereof.
7. The catalyst of claim 1 where the catalyst is formed into a shaped article selected from the group consisting of pills, extrudates, spheres, irregularly shaped particles and tablets.
8. The catalyst of claim 1 where the Group VIII metal component is present in an
20 amount from about 0.01 to about 10 wt.% of the catalyst as the metal.
9. The catalyst of claim 1 where the modifier component is selected from the group consisting of titanium, niobium, rare earth elements, tin, rhenium, zinc, germanium and mixtures thereof.
10. The catalyst of claim 9 where the modifier component is present in an amount from
25 about 0.1 to about 50 wt.% of the catalyst as the element.

11. The catalyst of claim 9 where the rare earth element is selected from the group consisting of cerium, ytterbium, lanthanum, dysprosium and mixtures thereof.
12. The catalyst of claim 1 where the molecular sieve is selected from those having 8, 10 or 12 ring pores and having weak to medium acidity.
- 5 13. The catalyst of claim 12 where the sieve is selected from the group consisting of SAPOs, MAPSOs, UZM-4, UZM-4M, UZM-5, UZM-5HS, UZM-5P, UZM-6, UZM-8, UZM-8HS, UZM-15, UZM-15HS, UZM-16, UZM-16HS and mixtures thereof.
- 10 14. A process for producing acyclic paraffins from cyclic paraffins comprising contacting a feed stream comprising cyclic paraffins with a catalyst comprising a Group VIII (IUPAC 8-10) metal component, a modifier component, a molecular sieve and a refractory inorganic oxide at ring opening conditions to convert at least a portion of the cyclic paraffins to acyclic paraffins.
- 15 15. The process of claim 14 where the Group VIII metal is selected from the group consisting of platinum, palladium, rhodium, ruthenium, iridium and mixtures thereof.
16. The process of claim 14 where the catalyst is a physical mixture of molecular sieve particles and refractory inorganic oxide particles.
17. The process of claim 14 where the Group VIII metal component is deposited on the molecular sieve.
18. The process of claim 14 where the Group VIII metal component is deposited on the refractory inorganic oxide.
- 20 19. The process of claim 14 where the refractory inorganic oxide is selected from the group consisting of alumina, silica, silica/alumina, calcium oxide, magnesium oxide, clays, zirconia and mixtures thereof.
- 25 20. The process of claim 14 where the catalyst is formed into a shaped article selected from the group consisting of pills, extrudates, spheres, irregularly shaped particles and tablets.

21. The process of claim 14 where the Group VIII metal component is present in an amount from about 0.01 to about 10 wt.% of the catalyst as the metal.
22. The process of claim 14 where the modifier component is selected from the group consisting of titanium, niobium, rare earth elements, tin, rhenium, zinc, germanium and mixtures thereof.
23. The process of claim 22 where the modifier component is present in an amount from about 0.1 to about 50 wt.% of the catalyst as the element.
24. The process of claim 14 where the ring opening conditions include a temperature of about 200°C to about 600°C, a pressure of about atmospheric to about 20,684 kPa and a liquid hourly space velocity of about 0.1 to about 30hr⁻¹.
25. The process of claim 22 where the rare earth element is selected from the group consisting of cerium, ytterbium, lanthanum, dysprosium and mixtures thereof.
26. The process of claim 14 where the molecular sieve is selected from those having 8, 10 or 12 ring pores and having weak to medium acidity.
27. The process of claim 26 where the sieve is selected from the group consisting of SAPOs, MAPSOs, UZM-4, UZM-4M, UZM-5, UZM-5HS, UZM-5P, UZM-6, UZM-8, UZM-8HS, UZM-15, UZM-15HS, UZM-16, UZM-16HS and mixtures thereof.